CANADIAN ARCHITECT AND BUILDER.

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—THE—
CANADIAN ARCHITECT AND BUILDER,
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(With a Weekly Intermediate Edition—The CANADIAN CONTRACT RECORD),
PUBLISHED ON THE THIRD SATURDAY IN EACH MONTH IN THE INTEREST OF
ARCHITECTS, CIVIL AND SANITARY ENGINEERS, PLUMBERS, DECORATORS, BUILDERS, CONTRACTORS, AND MANUFACTURERS OF AND DEALERS IN BUILDING MATERIALS AND APPLIANCES.
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IT IS announced that the Province of British Columbia will be represented at the World's Fair by a building composed of every variety of wood that grows in her forests, adorned with ferns and mosses grown within her boundaries.

THE architect and decorator desirous of learning how to secure the most pleasing color effects, might profitably have spent a few of the latter days of October in studying autumn foilage in its unusually varied and brilliant aspects.

WE have been informed that previous to the publication of the October number of the ARCHITECT AND BUILDER, a misapprehension existed in the minds of many as to who was the author of the design of St. Paul's Episcopal Church, Toronto. We are pleased to know that unwittingly we were the means of removing this misconception, and of placing the credit of the design where it properly belongs.

WE would like to point out to the late secretary of the Toronto Architectural Sketch Club, who is now a resident of the "Ambitious City," a worthy object of ambition. It is that he seek to establish among the architectural students of Hamilton an organization similar to those now existing in Toronto and Montreal. There should be sufficient material available for the purpose, and Mr. Bond's enthusiasm and ability might be depended on to do the rest.

MUCH loss is said to have been caused the builders of Winnipeg by a recent strike of union plumbers. A local paper states that the employers signed an agreement to pay journeymen $4 per day after the 1st of August last, but when the time came, they claimed to be unable to carry out their promise on account of one shop in the city employing unqualified workmen at low wages. If this is the only reason the employers have to offer for the non-fulfilment of their written agreement, we unhesitatingly say that it is not a justifiable one.

THE Inspector of Buildings and the chief of the fire brigade have recently been engaged in making an examination of the public buildings of Toronto, with a view to determining whether sufficient means of exit exist. Their report has not yet been published, but from private sources it is learned that some buildings in which large congregations of visitors daily assemble, have been found to be dangerous in this particular. The last inspection of this kind took place in 1879. The public safety demands that for the future such inspection should be conducted at more frequent intervals.

RIGHTEOUS indignation has been aroused at the action of the Consumers' Gas Co. in tearing up the asphalt pavement recently constructed on Bay St., Toronto, for the purpose of laying mains on the intersecting street. Citizens were under the impression that no interference with permanent pavements of this character would be allowed, otherwise they would not have consented to be heavily taxed for the improvement. The large sums spent of late on asphalt pavements in Montreal and Toronto will prove to have been wasted if corporations of any kind are allowed to break up the roadway. Heavy penalties should follow any future attempts in this direction.

A GOOD report reaches us from Hamilton concerning the plumbers of that city, to the effect that their work is of a uniformly higher grade than can be found in most of the cities on this continent. However this may be, some work which we recently had the opportunity to examine in houses of moderate cost in that city, is certainly very creditable, while the materials and fittings used are of a substantial character and superior finish. There can be no doubt about the wisdom of sacrificing, if need be, exterior ornamentation for the purpose of making a house as perfect as possible in its sanitary appointments. We are informed that Hamilton has become too warm a place for the "skin plumber" to make a living in, and that in consequence the architects feel that they can entrust their work to any of the existing firms with confidence that it will be carried out as satisfactorily by one as by another. This must be admitted to be a gratifying condition of affairs.

IN the present number of the CANADIAN ARCHITECT AND BUILDER is commenced the publication of a series of short biographical sketches of the City Engineers of the most important Canadian cities. The problems which the City Engineer of modern times is called upon to solve, demand that he should represent the highest ability in his profession. It is expected that the majority of our readers will be interested in knowing something about the gentlemen who occupy this important position, and the history of their successful efforts should prove an incentive to young men entering upon their career.

SCARCELY a week passes during the building season that is not marked by serious injury or loss of life by reason of defective scaffolds. It is unfortunately true that the responsibility for most of these accidents rests with the workmen themselves rather than with their employers, and for this very reason it is impossible to guard against their recurrence. The workmen themselves construct the scaffolds, and should see that in point of material and construction they possess the necessary margin of safety. Reckless overloading of scaffolds has probably led to most of the accidents. Workmen are justified in refusing to venture upon a scaffold which they have reason to fear is too weak to support the strain to be put upon it. Difficulty is often experienced, however, in inducing them to exercise necessary caution in this direction.

AN article headed "Who is the Rumper and Where does Rumping Start?" appears in the *Monthly Circular* of the Stone Cutters' Association of North America, over the name of Albert Phillips, of Toronto. Mr. Phillips places the man who does more work than the average man, in a worse category than the so-called "scab," "copperhead," and "snake-in-the-grass" who works for under pay. He says: "How often do we hear the remark made 'Bill spoiled this yard; it used to be a good, easy shop before he came.'" To prevent other workmen from following Bill's bad example of working too fast, Mr. Phillips advises: "Keep your place, and consider it two bats behind." From the above, may the inference not fairly be drawn that the teaching of unionism is that it is the duty of its members to carefully guard against outstripping the efforts of the *average* workman, while at the same time endeavoring on all occasions to secure an advance in wages. This is, we take it, the meaning of "keeping two bats behind," and the reference to the "good, easy shop." It is another method of enforcing the unreasonable demand that all workmen must be paid the same wages, irrespective of their earning capacity. The workman is held to be worthy of being despised who exhibits any ambition to excel. The idea is one which, if attempted to be carried out in all branches of human industry, would speedily put a stop to the world's progress.

THE Toronto Architectural Sketch Club may properly be said to have been a successful organization from the outset, nevertheless its promoters think that in some respects it is open to improvement, and they are laboring earnestly to bring it up to a higher standard of perfection and of usefulness. New and more commodious quarters have been procured, and the work for the coming winter has been entered upon in a spirit which bids fair to result most satisfactorily. Prof. Wright, of the School of Architecture, has very kindly offered to conduct the classes in mathematics, and Mr. John Kiely, the classes in modelling. These classes will meet alternately on Tuesday and Thursday evenings of each week, and are certain to be the means of affording much valuable instruction in these important branches of knowledge. The officers have also been successful in arranging a series of lectures by gentlemen of recognized experience in the building trades on a variety of subjects pertaining to building construction. Thus means have been provided for students to make rapid advancement in the knowledge required in the practice of their profession. It remains for them to properly improve the opportunities thus placed within their reach. It is gratifying to learn that the Club starts the season with a largely increased membership. The officers elect may, we think, be relied upon to put forth every effort to make the future of the Club increasingly prosperous, and if properly supported by the members, they will no doubt succeed.

A CERTAIN class of real estate owners appear to be always on the look-out to take advantage of municipal authorities. If a public improvement is proposed, and any portion of their property is required for the purpose, they immediately place an exorbitant price upon it. The slightest pretext is made use of to prefer claims for damages. The action of such persons has frequently been the means of blocking public improvements, and in some cases the municipality, and indirectly the citizens, has thereby suffered great inconvenience and loss. In view of this, we note with satisfaction an instance which occurred in Toronto recently, wherein the tables were turned and the biter bitten. A certain speculative land owner some months ago brought suit against the city, claiming heavy damages on account of the construction of a sewer through his property, and to the public surprise, was awarded the sum of $35,000. The city authorities thought their best course would be to purchase the land outright and convert it into a public park. The owner was asked to state a price, which he did, but the amount, $74,000, was considered so exorbitant that the idea of purchase was abandoned. A week or two ago, the owner was surprised to learn that the assessment on this land had been appealed against by the City Solicitor on the ground of undervaluation. The City Solicitor insists that the property shall be assessed at the valuation put upon it by the owner, which would seem to be a reasonable enough proposition, although the latter indignantly refuses to view it in this light, which may be taken as proof of the old saying, that "circumstances alter cases."

THE builders and contractors of the Australasian colonies have determined to adopt the British system of basing their tenders upon Bills of Quantities prepared by competent quantity surveyors. The tendency in this direction is becoming very marked in the United States also. In Canada the uniform basis of tendering is perhaps as urgently required as in any other part of the world, but as yet no steps have been taken to obtain it. The *Australian Builder* describes the English method as follows:—"In London the Quantities are usually taken out by a quantity surveyor (or firm) appointed by the architect, and responsible for the accuracy of such Quantities. In large and important jobs two independent surveyors usually are appointed and work together, sharing the commission between them, by which the risk of error is reduced to a minimum. The Quantities are then lithographed along with the Specification, before tenders are called for. The lithographed Bills of Quantities and Specification are supplied together to tenderers, and the former bear, after the first Total, on the Summary of Trades sheet, the words, "Surveyors' Commission on the above (so much) per cent.", left blank. This, every tenderer fills in, in order to arrive at the gross amount of his legitimate *estimate* (which may, or may not, form the amount of his actual *tender*), and the successful tenderer pays the surveyor out of the first cash instalment he receives upon his contract. The tenderer, as a rule knows nothing as to who takes out the Quantities, until they are taken out and lithographed, and tenders are called for. We know of no practice or proposal more thoroughly equitable and satisfactory to all parties than this."

AN enterprising firm of architects in Montreal have opened a school for architectural students. We are not aware what subjects are taught that would assist students to gain a knowledge of architecture, but are informed that nothing in the shape of practical teaching relating to building construction is imparted. At a meeting of members and student associates of the Province of Quebec Association of Architects recently held for the purpose of listening to a paper on "Architectural Training" by Mr. Hutchison, a representative of this firm appeared and proceeded to advertise the merits of his school. In view of the fact that the Quebec Association had appointed a committee of its members to report on the institution of classes and lectures for the instruction of students who should become members of the Association, this action must be regarded as a somewhat presumptious one. It is surprising that the Association should have permitted it. It is still more surprising that some of the members should actually have opposed the proposition for the formation of classes and deliverance of lectures under the auspices of the Association, notwithstanding other members had volunteered to place their time and talent at the disposal of the students for this purpose. They surely must have overlooked the fact that they were aiming a serious blow at the prosperity of the Association, while working into the hands of those interested in preventing instruction being afforded the students by the Association. We are informed that the private school referred to, gives instruction in the French language only, and thus, no matter what may be its advantages to the French student, it is of no service to many students who are unfamiliar therewith. We were of the opinion that the education of students by means of classes, lectures, &c., was one of the most important of the objects which the Association was designed to accomplish. The fact ought at least to be apparent that the Association cannot hope to build up a successful future if it disregards the interests of the students. If the idea of affording instruction to students is abandoned, one of the strongest inducements which could be held out to them to become members will have been taken away. We hope that those who have at heart the present and future welfare of the Association will see the wisdom and necessity of making it a source of benefit to the rising generation of architects, and thereby rallying them to its support.

OUR ILLUSTRATIONS.

CARVED WOOD CAPITALS, ST. ALBAN'S CATHEDRAL, TORONTO.—EXECUTED BY THOS. MOWBRAY, TORONTO—R. C. WINDEYER & SON, ARCHITECTS, TORONTO.

PROPOSED NEW DRILL HALL, TORONTO.—THOS. FULLER, DEPT. OF PUBLIC WORKS, OTTAWA, ARCHITECT.

"ALPHONSO BLOCK," VICTORIA ST., TORONTO.—DICK & WICKSON, ARCHITECTS.

The Rathbun Co., of Deseronto, Ont., recently shipped a carload of doors and window sashes to South Africa.

Mr. C. S. Nellis, from the headquarters of the Adamant Manufacturing Co., Syracuse, N. Y., is at present making a tour of the Dominion in the interests of the Toronto Branch of the business.

HOW TO ESTIMATE.

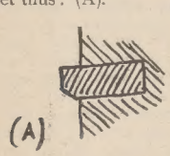
By Wm. H. Hodgson, Architect.

In pursuance of the announcement made to contractors in the Canadian Architect and Builder for October, I present to the reader the first of a series of articles designed to instruct the contractor in the method of preparing estimates on an accurate basis. The quantities herewith furnished have been taken with the greatest care and accuracy from the accompanying design and specification for a residence, and consequently are reliable. They give the actual materials in the building when completed, and the method by which the quantities have been arrived at. No allowance has been made for what is termed "waste"; this has to be considered by the contractor in his pricing of the several works. No attempt has been made to affix prices, as these vary so widely in different localities. The contractor should be familiar with prices in his own locality. The adoption of this system would place all contractors on equal footing so far as the preparation of their tenders is concerned, and would do away with all guess-work:

SPECIFICATION.

EXCAVATOR, MASON AND BRICKLAYER.

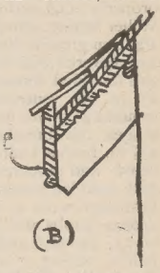
Excavate the ground as required for the cellars, and foundation of walls, chimney breasts, glazed pipe drains, etc. All vegetable mould to be put to one side for future use as directed. Fill in and ram and use the superfluous earth in terracing and leveling the lot, or cart away, as may be directed. The excavation to be 9 in. larger on all sides than the building, and no filling to be done till the stone walls are plastered outside and inspected. The drains marked G. P. on plans to be executed in with the best vitrified salt glazed pipe (Scotch or American), laid to proper fall as may be directed, jointed in cement, with all necessary bends, junctions and traps complete. Connect with sewer in street, contractor paying all fees. Put McGuire's cleaning out trap as shown, pipe from same to be carried to within 18" of surface and covered with stone flag. (A l sewage drains inside of building will be of iron as per plumbers' specifications.) Lay 3" common tile weeping drains as shown properly graded and connected to main drains behind running traps as shown. Foundation walls to have footings of broad, flat stone 6" thick, projecting 4" on each side of wall above, and no stone to be less than half the total width of footing. The walls to be carried up to the height shown in good rubble masonry, composed of lake or other approved stone of the best quality, laid in the best prepared mortar, well built and bonded together, and having the joints on each side neatly struck with the trowel; the portion showing above ground and where lined is to be of brown Credit Valley courses in stone, neatly tape pointed in brown mortar, and having one border to at least every superficial yard of wall. The jambs to be tooth chiselled and to show a narrow draft on outer face. Plaster or parge outside of foundation walls from footings to finished ground line with ½ Portland cement mortar. None but hard bricks will be allowed on the premises. Brick walls in basement to be built of hard clinker bricks, with a neat struck joint. Build in all brick walls in basement a double course of roofing slate on top of footings 1" wider than wall to prevent rising of damp. Pier carrying front steps to be of hard clinker bricks on stone footings. The walls from underside of plinth to be carried up in brickwork of best hard, well-burned bricks laid in best prepared mortar. Projecting bays to be tied to main walls at every 5th course with stout hoop iron bond carried well into walls. Provide four (4) wrought iron straps 2"x¼" to be forked and built into brickwork, and well spiked to studding of front where prepared for tiles. The walls to be faced with the very best selected Carlton or other equally approved red bricks, selected of dark color, true and straight, laid in English bond, and finished carefully with a bead tool joint in mortar colored with Cabot's or other equally approved dark brown mortar stain; bricks to be well wetted. On completion of gutters, thoroughly clean down with acid. Inside walls of back porch to be faced with white bricks finished with neat bead tool joint. Turn relieving arches of at least two rings over all openings of doors, windows, &c., and neat cut and pointed arches at openings as shown. Build in strips for battens at every 2 feet in height in all outer walls and wherever else directed—strips to be provided by the carpenter. Beam fill on all walls to underside of floor and roof boarding, making all spaces thoroughly tight and weather proof. Turn proper arches over fire place openings on 2½"x½" wrought iron chamber bar, all flues to be formed circular 9" diameter, carefully built round moulds 3 ft. long, which are to be drawn up a few inches at a time as the work proceeds. Provide and build in proper galvanized iron collars to one flue in each room (except those having fire places). Flues not connected with fireplaces to have proper iron soot doors in iron frames. Form ash dumps from ground floor fireplaces as shown, having iron soot doors set in cast iron frames. Leave 9"x12" opening into vent flue near ceiling of kitchen, and 7" diameter into same flue near ceiling of bath room. Chimneys to be carried up in brickwork of uniform color with projecting courses for caps. Bed in mortar all bond timbers, plates, etc., and build in all lintels, wood bricks, frames, cut stone and other work required to be set in masonry or brickwork. Support foot of iron soil pipes with 9"x9" brick pier, three courses high. Form substratum of concrete floor with a 6" layer of clean broken stone chips, pounded flat and level. The entire cellar floor to be laid in concrete 3" thick, of Portland cement, sharp sand and coarse gravel in proper proportion, and all but laundry and back porch floated to a smooth surface with a coating of Portland cement and sand ½" thick. Laundry and porch joists will be bedded in concrete. All hearths to have 4½ brick trimmer arches and to be of concrete as specified for cellar floors. Finished hearths will be of tile provided by the proprietor. Brickwork to be built from outside scaffolding which is to be left for the use of other trades till directed to be removed by the architects, special care being taken to prevent walls being splashed from scaffolding. The labels and strings where shown to be one course of plinth brick, set thus: (A).


(A)

Provide and set sills of Credit Valley stone to basement windows, to be 6"x9" and weathered; fuel doors will have wood sills. The sills to all other windows as tinted brown to be executed in the best quality of Portage Entry stone, or other approved brown stone, throated, chiselled or rock faced, weathered and seated; rear sills may be of Ohio stone. Heads of fuel doors to be of brown stone 9" high. Head of entrance door to be of Portage Entry stone, 1½ bricks thick, cross tooth chiselled. Corbels at front pilasters to be of similar stone similarly finished. Carefully set in fine mortar and protect with boarding till the completion of the work. Bricklayer to attend on other trades in the execution and for the perfect completion of the work.

CARPENTER AND JOINER.

The lumber for the carpenters' work to be of good description of white pine thoroughly seasoned, free from sap, shakes, loose or large knots, or other imperfections, and to hold the full sizes shown or specified, when fixed in the building; good sound seasoned hemlock may be used for joists and rafters. The joiner's work (unless otherwise specified) to be of best description of white pine, clear and thoroughly seasoned. Inside work on ground and first floor will be varnished. Provide and fix all necessary centreings and turning pieces to openings of doors and where required. Provide and fix lintels to all openings of doors and windows, cambered at top, and not less than 6" in depth at centre, and resting 6" on walls on each side. Provide straps 2½"x½" to be built into walls under bearings of joists and elsewhere as required for fixing skirtings, trimmings of doors, windows, etc., and other finishings, and at every 2 feet in height of outer walls, on which to nail battens. Batten all outer walls, (including attic where necessary) and elsewhere as required with 2"x1¼" battens, at 16" centres—battens not to be placed till walls are parged. Porches will not be plastered. Provide proper grounds for fixing trimmings, etc. Cellar floors of laundry and porch to have 3"x4" cedar joists bedded in concrete. Ground, first and attic floor joists to be 10"x2" at 16" centres properly trimmed at fire places, wells of stairs, etc., trimmers to be 4" thick or double 2" and framed with double tenons. Put a tier of 2"x2" herring bone strutting to each bearing of joists on all floors. Prepare floors for pugging at gables where projecting beyond wall line with one inch boarding. Sloping roofs, 6"x2" rafters, at 16 centres, and valleys 8 in. x 3 in., plates 9 in. x 3 in., collars 6 in. x 2 in. at 16 in. centres. Ends of rafters to be dressed where visible. Sloping roofs to be laid with dressed ⅞ in. matched boarding in widths not exceeding 7 in., free from loose knots, shakes, or sap, well nailed. Put saddles behind chimneys boarded as roof and 3 in. rounded roll to ridges. Put dressed facia and 1 in. beaded soffit to eaves, and bed moulding. (B). Gables to be 4 in. of studding at 18 in. centres, sheeted both sides with narrow matched stuff and lined on inside before battening with a double thickness of sheathing paper well lapped; batten as specified for other walls, sheet soffits with narrow, double beaded stuff matched on double sheathing paper made close and tight at walls, etc., and (C) form eaves and bed mouldings, as shown. Beams and corbels at side gable to be dressed and moulded as shown. Front gables to have dentil moulded large boards, as shown, (D), secured in strongest manner. Roof of rear porch to have


(B)

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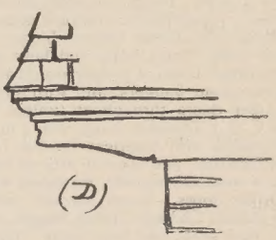
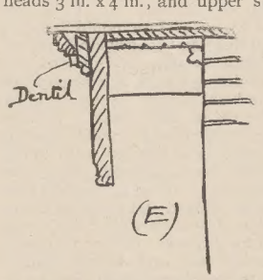

(D)

dressed rafters, and 1⅛ in. matched and beaded dressed roof boarding. Partitions to have heads, sills and braces 4 in. x 3 in.; door studs 4 in. x 4 in., or double 4 in. x 2 in.; common studs 4 in. x 2 in., 16 in. centres, all to be properly framed and cross braced, those carrying joists or rafters to have heads 3 in. x 4 in., and upper studs to be carried down to them and to be well braced. Studs to be placed on flat in confined places. The ground and first floors to be laid with ⅞ in. dressed, tongued and grooved seasoned flooring of the best quality, in boards not exceeding 3½ in. in width, blind nailed to joists, and properly cleaned off on completion; attic and basement, (where called for) to be laid with ⅞ in. matched flooring of good quality, in boards not exceeding 5 in. in width, floors in attic to extend to wall line. Ground and first floors to be laid on thicknessed 1 in. boarding laid diagonally with a double thickness of carpet felt between. Carpenters not to lay any floors till all gas or other pipes are put in, and finished floors not to be laid till completion of plastering. Put mitred margins to hearths. Main stairs to be built on 1¾ in. moulded strings, 1⅜ in. wall strings to have 1⅜ in. treads, rounded and returned nosings, cavetto and fillet and cut brackets, ⅞ in. risers, two 7 in. panelled and moulded newels at foot, and the rest 5 in. turned and moulded cherry newels, 3 in. x 3 in. moulded cherry handrail with 2 in. roll, and 2 in. turned pine balusters. Stairs to be built on proper carriages, well bracketed with 1 in. brackets nailed to each carriage under each step. Spandril at side of stair and forming enclosure to coat closet of 1⅜ in. framed and moulded panelling, all according to drawings; panelled door to closet under. End of stair facing entrance to have balustrade as shown. (F). Back stairs to have 3 in. rounded hardwood rail, 4 in. hardwood newels, and square balusters, to have 1⅜ in. treads, rounded and returned nosings and scotia ⅞ in. risers, put together in the best manner, with 1⅜ in. wall strings. Stairs to cellar to have close strings, 2 in. treads, 3 in. rounded rail, 4 in. x 4 in. chamfered newels. The kitchen, back stairs and pantries to be sheeted with ⅞ in. matched and beaded sheeting 3 ft. high, and bath room 5 ft. high, blind nailed to proper grounds, and finished with moulded capping; boards not to exceed 4 in. in width, except in bath room, where they will not exceed 2½ and to be double beaded or moulded. Drawing and dining rooms, hall, vestibule and staircase to have 10 in. double facia moulded skirtings, and the rooms and hall on first floor 9 in. single facia ⅞ in. thick, all properly scribed to floors and nailed to proper grounds. Nail fillet to floor at base. Base in attic 7 in. torus. Trim at registers and cut for plumbers, and hot air pipes. Put ⅞ in. staff beads to all projecting angles in kitchen and attic. Bracket down for plaster arches on ground floor and first floor, as shown by dotted lines, bracket down for cove in drawing room. The cellar windows (except where otherwise specified) to have 6 in. x 4 in. solid rebated and chamfered frames, 1¾ in. sash



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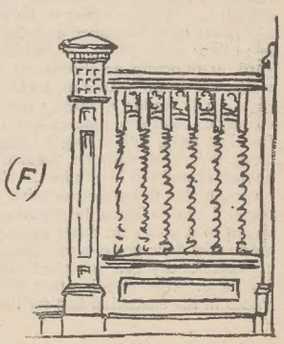

(F)

hung at top with 3 in. butts, and to be furnished with iron water-bars, 4 in. barrel bolts and hooks to hold them open. Cold air inlet to be protected with stout wire having ¼ in. mesh and well secured. Fuel doors to have 2 in. oak sills, to be 1¾ in. panelled and prepared with stops for glazing, hung at top and furnished with hooks and 6 in. bolts. The whole of the windows above cellar (except where otherwise specified) to have proper boxed frames, 2 in. double sunk sills, outside hangings stiles, 1¾ in. moulded sashes hung with the best sash cord over the best iron axle pulleys. Front drawing room window to have boxed head, fixed fanlight, moulded transom as shown. Four (4) windows on front elevation to have 2⅜ in. sashes with stops in preparation for plate glass. Windows to be fastened with approved fasteners of the value of $4.50 per doz., and furnished with best bronze window lifts. Bed room windows, first floor, front elevation, to have simple moulded pilasters, sills, heads and transoms as shown, fanlights to be fixed and prepared with stops for lead glazing. Short window at first main stair landing, and that in linen closet, to have solid rebated frames, with stops for lead work. Windows in coat closet under main stairs, and side windows in attic to have casement sash with drip and water bar, properly hinged, to have knobs, and secured with brass bolts. Dormers to be according to details and to have casement sash with drip and water bar, to be properly hung and fastened with spring catches and brass bolt. Fit to four windows in west elevation 1⅜ in. outside venetians properly hung and fastened. Prepare four windows in front elevation for Willer sliding blinds with all necessary stops, fillets, blocks, etc., complete. That on ground floor will be made to slide in pockets, behind window back, and covered with hinged flap. Entrance door to have 6 in. x 4 in. rebated and moulded frame, 2 in. staff bead, and 2 in. rounded oak sill, door to be 2⅜ in. oak veneered on outside, panelled and moulded and prepared with mouldings above for glazing, to be hung with three 5 in. loose butt bronze hinges, and furnished with hall door lock of the value of $4, and having 2½ in. bronze knobs. Vestibule doors to be 2⅛ in. panelled and moulded below, and prepared with mouldings above for glass, doors hung in rebated and moulded jambs with three pairs of 4 in. loose butt bronze hinges, and furnished with 4 in. American rebate mortice locks, brass bolts, keys, bronze knobs and furniture, 9 in. bronze flush bolts. Back porch door to be 1¾ panelled and bead flush, hung on 6 in. x 3 in. rebated and chamfered jambs, having 2 in. oak sill, to be properly hung and furnished with Carpenters' rim lock, white furniture and 8 in. barrel bolts, hinged and bolted fanlight. Side porch door to be similar, but to have hall door lock of the value of $2, porcelain and plated furniture. The doors to the two principal floors to be 1¾ panelled and moulded and hung to 1¾ in. rebated jambs. Doors to principal rooms, ground floor, to be hung and furnished as specified for vestibule doors, those to first floor to be hung with 4 in. loose butt Berlin bronze hinges and furnished with 4 in. American mortise locks, brass bolts and keys, and porcelain and plated furniture. Sliding doors to have proper overhead track, and to be furnished with Clarke's patent hangers, and with sliding door lock and flush handles. The other doors throughout (unless otherwise specified) to be 1⅜ in. panelled and moulded, hung with 4 in. loose butts to 1⅜ in. loose jambs, and furnished with American mortise locks, brass bolts and porcelain and plated furniture, two doors in attic to have pivoted fanlights. Closet doors to be 1⅜ moulded one side, furnished with locks and furniture to correspond with other doors. Doors marked "swing" to be 1⅜ in. thick hung with nickle plated, Chicago spring hinges, and furnished with porcelain finger plates, both sides, and brass bolts. Opening marked "curtains" will not have doors but to be prepared for them, with rebated jambs, casings, etc. Doors in basement to be 1⅛ in. batten in 1⅛ in. jambs, having stops planted on, hung with 4 in. butts, and furnished with rim locks and mineral furniture. Architraves on ground floor main building to be 5½ in. double faced with band moulding. Architraves on first floor to be similar 4½ in. wide. Architraves in small rooms, passages, kitchen, attic, etc., to be 4 in. moulded with plain chamfered blocks. Put 2½ in. picture mould at spring of cove in drawing room. Windows, except those to two principal rooms, ground floor, to have 1½ in. moulded window boards, bed moulds and moulded aprons. Windows of drawing and dining rooms to have panelled and moulded window backs. Front steps to have turned newals, moulded rail and balustrade as shown, treads to be 1¾ in. and slatted. Kitchen pantry to be fitted up with six tiers of 1 in. dressed and beaded shelving supported on proper bearings. Fit up dressers in kitchen and service pantry, having 1½ in. panelled and moulded doors, properly hung and fastened, ⅞ in. beaded shelving—lower portion to be wider and to have drawers and cupboards below, having properly hinged and fastened doors, all according to detail; top of wider portion of dresser will be flush with top of sink, and to be of hardwood grooved for drainer. Bed room closets to have beaded shelves as shown, 5 in. beaded rail and strong bronzed metal hooks, 9 in. apart. Provide 30 feet of beaded rail with hooks 9 in. apart, to be placed where directed, also 100 feet of shelving on bearers, all in addition to that specified for closets. Hanging shelf in larder to be of 1⅜ in. stuff, suspended from ceiling with four ½ in. wrought iron rods. Fit up two tiers of 1½ in. shelving at each end of larder on proper supports. Linen closet to have wide shelves six in height, at ends, and enclose those at one end with hinged cedar fronts, fastened with spring catches. The steps in back porch to be of pine 1¾ in. treads, 1 in. risers, 2 in. strings, rounded rail, bar balusters and chamfered newels. Fit up stands for kitchen and cellar sinks with hardwood capping. Do all necessary attendance and fitting for bath, basin and water closets (not including plumbers' work). Case plumbers' work where required with narrow sheeting hinged and bolted at front. The capping of bath and lids and seats of w. c.'s to be of cherry, the latter supported on moulded brackets; w. c.'s to have double lids for slop sink. Front of bath to be of same sheeting as specified for room; panelled, hinged and bolted doors to front of basin. Provide all necessary boxing and beaded runs to pipes; do any necessary cutting for plumber. W. c. in cellar to be enclosed with sheeting, and batten door, and hung and furnished as other basement doors. Door to be kept 6 in. from floor and ceiling. Borrowed light as shown. Put 2 in. planking in yard at doorway as shown, on 4 in. x 4 in. cedar sleepers. Form slatted walks as shown with 2 in. x 2½ in. dressed stuff, dressed three sides, on 4 in. x 3 in. cedar sleepers; put rounded curb at edges of that to main entrance. Put side gate as shown, formed with narrow pickets, and strong framing, hung with strong T hinges and furnished with wrought iron thumb latch, bolt and padlock, dressed and rounded cedar posts, footed, and having chamfered head piece. Erect short piece of picket fence 6 feet high on south side to harmonize with gate, also a short piece on north side of porch. Fuel bins to be constructed of 2 in. horizontal planking, strongly nailed to 4 in. x 4 in. posts extending from floor to ceiling; the front to be made to slide in grooves for removal if necessary. Construct cold and fresh air ducts of dry 1 in. matched stuff with hinged valve, which will close inlet from floor when opening that from outside. Carpenter to attend on other trades in the execution and for the perfect completion of the work.

SLATER.

Line valleys with galvanized iron 15 in. wide, increasing to 18 in. near foot. Joints to be soldered where in danger of snow backing up water, and to have 4 in. lap in other places. Cover ridges, etc., with No. 28 iron. Step and cloak flash against all walls, chimneys and checks and apron of dormer. Put strip of galvanized iron 5 in. wide, 3 in. on roof and 2 in. drip over back of gutter, well secured. Cover flat of cornice over three windows on first floor with galvanized iron, lapped, tacked and soldered, and turned up 6 in. behind tiling. Cover the sloping roof, including back porch and checks of dormer, with best quality of Canadian roofing slate from the Rockland quarries of about 20 in. x 11 in. size, and having double courses at eaves. Slates to be laid on heavy felt provided and laid by slater. All exposed portions of dormer to be carefully covered with felt well lapped. Cover east and south gables as shown with Dancy's, Ontario, or other equally approved tiles, of good rich, dark red color, well secured to walls, and laid on heavy felt, well lapped and tacked.

TINSMITH.

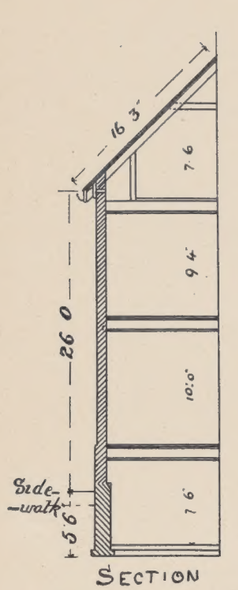
Put 4 in. eave troughs of galvanized iron to eaves of back porch, and 5 in. do. to eaves of house of No. 28 guage iron. Gutters to be stiffened with 7-16 in. x 7-16 in. wro't iron bars and well secured to rafters, and to have backs carried up to slates. Put three (3) stacks of 4 in. octagon down pipes to house and one 3 in. to back porch, all to be of the very best iron No. 28 guage, approved brand, properly connected with gutters, secured to walls with iron holdfasts, and extending to surface of ground and there connected with drain pipes with proper caps to pipes. Carry 3 in. down pipes from gutters on south gable to main eaves.

PLUMBER AND GAS FITTER.

Lay on through house best tested iron piping, beginning with 1¼ in. at meter, and connected with various points marked on plans with letters P for pendents and B for brackets, nipples left capped ready for fixtures. Pipes to diminish according to position to 1 in., ¾ in. and ½ in., all to be thoroughly tested. Drop lights to be taken out of the side of supplies and all supplies to brackets to rise from supply below, and in no case to drop from pipes overhead. Lay on separate supply from separate meter, to two fire-places on ground floor and to gas-stove in kitchen, beginning with ¾ in. and diminishing to ½ in. Provide cocks with keys at fire-places. Lay on water to sinks, bath, basin and water closets with ½ in. 6 lbs. lead supply. Service from street line to line of branches to fixtures to be ⅝ in. 8 lbs. lead. Provide hose connection at window of furnace room, with key cock, and provide stop and waste cock near floor. Put ¾ in. brass stop and waste cock immediately inside wall of house, and all pipes to be graded to this point. Fit up in bath room best No. 14 guage, tinned and planished copper bath 6 ft. long, with ½ in. 6 lbs. lead, hot and cold supply, and best heavy plated Fuller double bath cocks, plated rose and 1½ in. overflow, 1½ in. waste, Dubois trap, and brass trap screw, and plated plug and chain. Wash basin of best marbled earthenware, oval, and having Motts standing waste, 1¼ in. counter sunk marble top, 1 in. back and end, 12 in. high, heavy plated Fuller cocks, ½ in. hot and cold lead supply and 1½ in. lead waste, Dubois trap and brass tap screw. Basin to be attached to marble top by means of brass clamps. Provide and fit up on first floor an all porcelain flushing rim wash-out closet, equal in value to the Inodoro or Unitas, with lead lined tank, having brackets, valves, supply, overflow, balll cock, &c., complete. Provide porcelain drip tray. Soil pipe to be 4 in. of cast iron carried from drain 2 feet beyond wall to 4 feet above roof at point of exit and to down pipes at surface of ground, to be coated both sides with coal tar and joints carefully caulked with ohum and lead. Dig for these pipes and replace earth properly leveled, and cart away surplus if any. Pipe to be of weight called for in city by-law. Provide all necessary traps, and hand-holes, with brass cleaning screws as shown. Foot of soil pipe will be supported on brick pier built by mason. Carry 2 in. cast iron waste from kitchen siuk along ceiling of cellar to main soil pipe, supported on wro't iron hangers. Carry a 3 in. cast iron vent pipe from basement closet connecting to soil pipe above highest fixture (in bath room), and leave connections for vents from the various traps as required. The 4 in. soil pipe to be enlarged to 6 in. above roof line, and to have opened mouthed top. Carefully flash on to roof with 16 oz. copper, into hub which must be kept clear of roof. W. c. in basement to be a flushing rim, cane ware wash out with 4 in. trap, syphon, cistern, etc., complete. Ventilate from seat to special flue in laundry with 3 in. galvanized iron pipe. Put a 7 in. diameter enameled valve register in vent flue near ceiling of bathroom. Put a 9 in. x 12 in. enameled valve register near ceiling of kitchen into vent flue. Ventilate drain by means of a 4 in. cast iron pipe connected to drain and carried 2½ feet above finished ground line with return bend top. Put under bath and wash basin on first floor proper safes of 3 lbs. lead with ¾ in. waste, with brass flap valve on the same emptying over kitchen sink. Carry proper safes under all pipes crossing ceilings. Safe under w.c. on first floor to be of marble, 1¼ in. thick and counter sunk; put brass strainer on outlet of waste and connect to other safe wastes. Fit up in kitchen best galvanized iron sink 2 ft. 6 in. long, with brackets and enameled back and having 1½ in. heavy lead waste with Dubois trap, and brass trap screws and hot and cold supply of ½ in. lead pipe with brass Fuller cocks. Fit up in kitchen at back of stove on proper stand a heavy galvanized iron round topped cylinder of 40 gallons capacity, with ⅛ in. heavy lead hot and cold supply, ¾ in. brass connections with stove in kitchen with shut-off cock; connect to stove with 1 in. iron pipe. Cylinder to have ¾ in. sediment pipe and cock at bottom; also place ¾ in. stop cock on supply pipe. Boiler to be supplied from pressure; provide combined safe and vacuum valve. Fit up small cast iron sink in cellar, having 1½ in. lead waste, trapped and supplied as other sink. Overflow pipe from basin and bath to be branched into dip of traps from same. Make all necessary Y branches for work as required, all waste pipes to have vents of 1½ in. and 2 in. lead pipe, carried into 3 in. pipe before mentioned. Vents for w. c.'s to be 3 in. diameter. Provide and fix from hall near head of main stairs to kitchen a proper tin speaking tube, with silver plated mouth pieces, etc., complete. All to be left complete and perfect in every particular. All work to be in conformity with city by-laws.

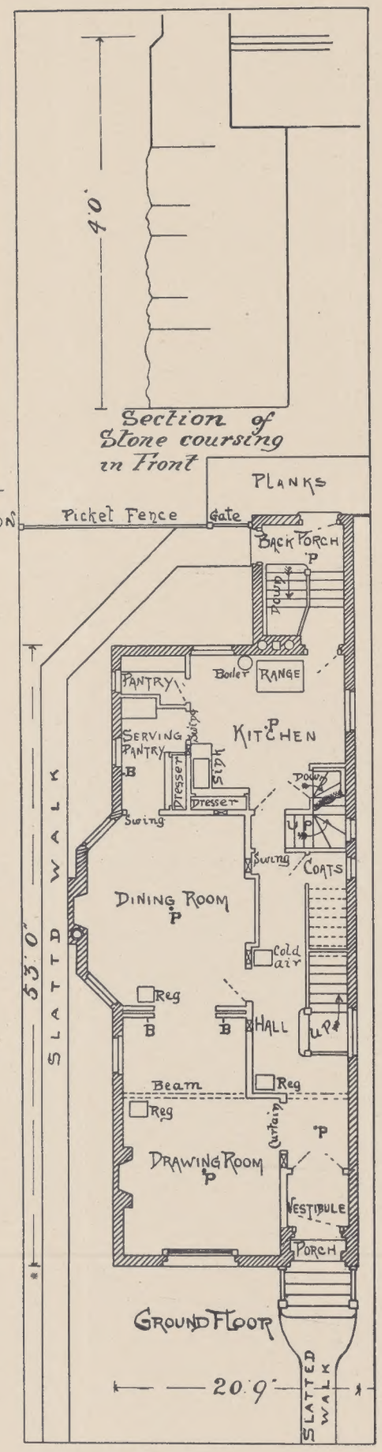
PLASTERER.

Inner face of all outside walls, including attice, to be well rendered with best hair mortar after being built and before battening is executed, and make thoroughly tight also between all joists, etc., entering therein, also about all door and window frames. Floors at gable in attic to be deafened with mortar 1½ in. thick. Lath the partitions, ceilings, soffits of stairs and other places prepared for lathing, with the best sawn pine laths, 1 in. wide for ceilings and 1¼ in. for walls, 5-16 in. apart, ends butted and joints broken every 18 in. Outer walls will be battened for lathing. Porch will not be plastered. Plastering to be of the best two coat work hard white finish. The ceilings of cellars throughout to have two coats hard white finish. The first coat of plaster in all cases to be continued behind skirtings, trimmings, etc. Form slightly rounded corners to all projecting angles to principal rooms and hall on ground and first floors. Simple cove in drawing room springing from wooden picture mould. Plaster cornice in dining room to be 24 in. girth, in hall 20 in,, and in vestibule 15 in. Put 2½ ft. moulded centres to dining and drawing rooms, and 18 in. diameter to hall. Form simple moulded beams in ground and first floors as shown by dotted lines. Twice lime whiten walls of cellars. The whole to be executed with the best description of material and workmanship, and to be

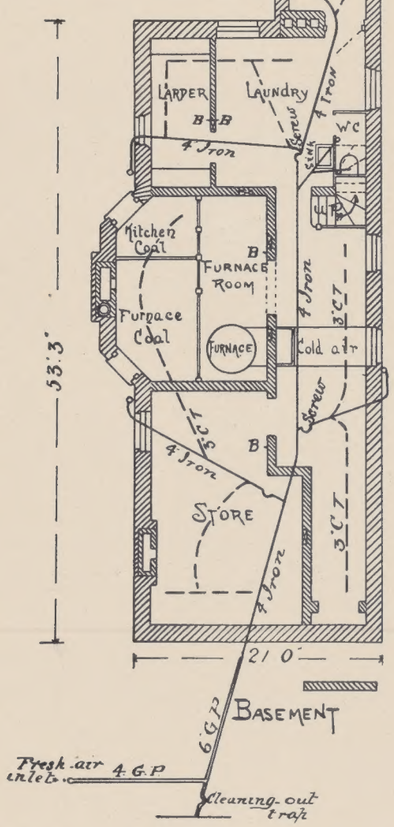


SECTION

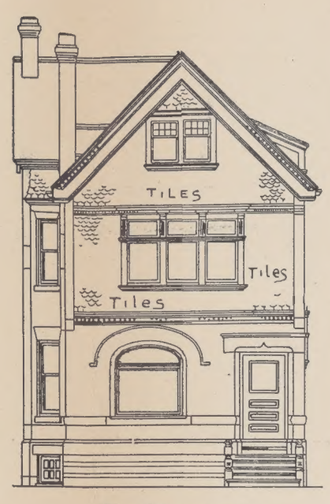

WEST ELEVATION



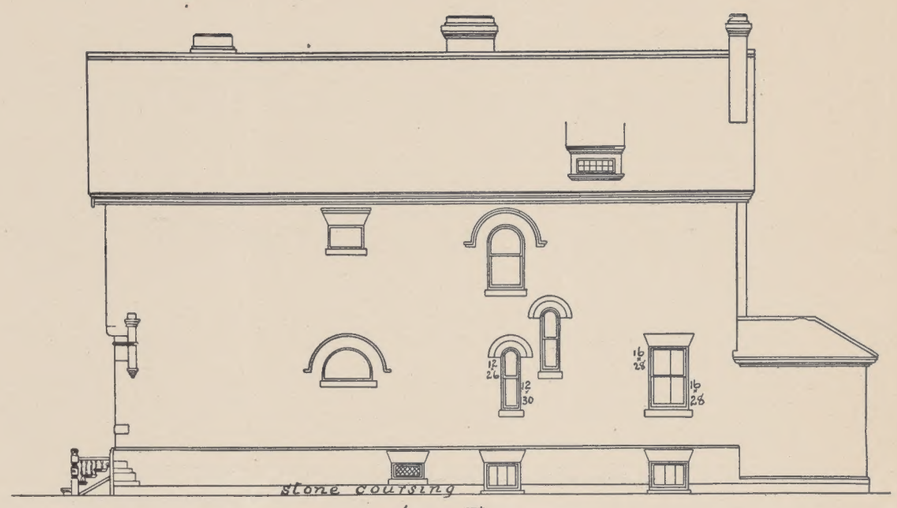
GROUND FLOOR



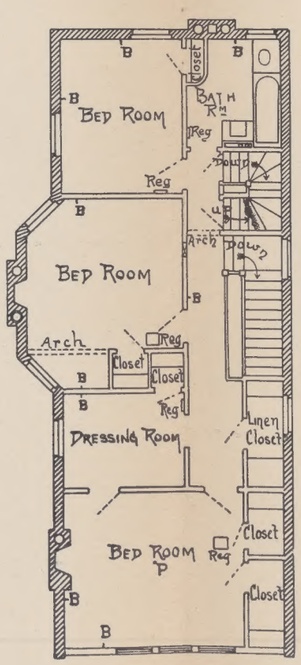
BASEMENT



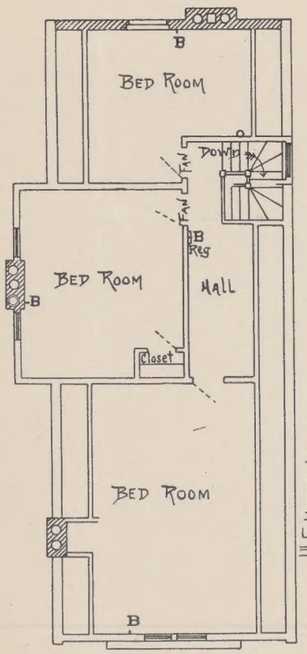
EAST ELEVATION



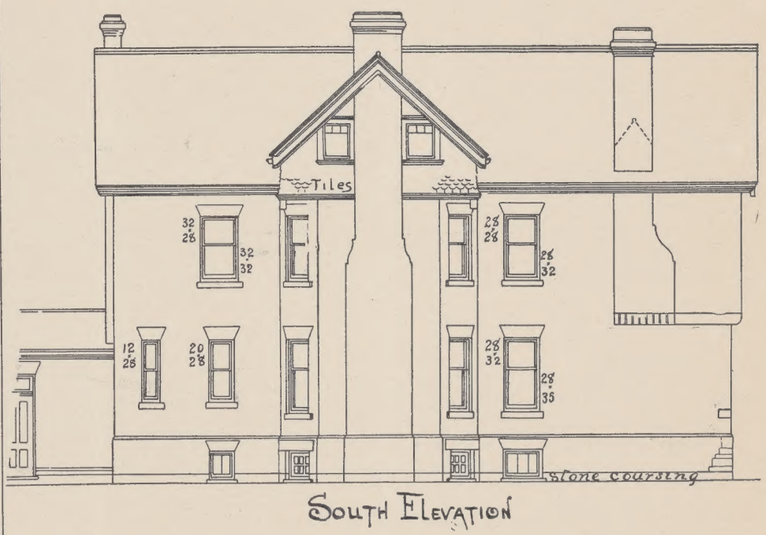
NORTH ELEVATION



FIRST FLOOR



ATTIC



SOUTH ELEVATION

for Bill of Quantities

Scale 0 5 10 20 30 40

PROPOSED NEW DRILL HALL, TORONTO, ONT.

Thos. Fuller, Dep't of Public Works, Ottawa, Architect.

Carved Wood Capitals.

St. Alban's Cathedral, Toronto.

R. C. Windeyer & Sons, Architects.

Executed by Thomas Mowbray.

"Alfonso" Block," Victoria Street, Toronto.

Dick & Wickson, Architects.

left sound and perfect after making good after other trades. Plasterer to remove rubbish and broom out floors on completion. Leave woodwork clean and ready for painter.

PAINTER AND GLAZIER.

The whole of the internal and external dressed woodwork usually painted and except where otherwise specified, including outside steps and slatted walks, and dressed fence and gate to be painted three coats of white lead and linseed oil paint of approved tints. The work to be properly knotted and stopped, and well rubbed down after first and second coats. The woodwork of ground and first floors to be stained, oiled and twice varnished with best copal varnish. Treads and risers of main and back stairs to be stained and twice oiled. No inside blinds to be included in tender. Outside venetians to four rear windows to be painted three coats after priming. The visible galvanized iron work to be painted three coats. Except where otherwise specified, the whole of the windows and fanlights, glass doors, etc., to be glazed with double diamond star glass, selected free from flaws and defects, to be well puttied and back puttied, and bradded, the whole of the sashes to be primed before glazing. Glaze four windows on east elevation with ¼ in. polished plate glass, and the small square lights of east windows in attic with rolled cathedral glass of selected tints. The glass in fuel doors to be ⅛ in. rough rolled plate secured with stops. Other glass in cellar to be diamond star. The two windows at staircase landings and fanlights of four windows in east elevation to be glazed with stained glass provided by proprietor. Glass in vestibule doors will be provided by proprietor. Glass in entrance door to ⅜ in. be polished plate, bevelled. Glass in fanlights as marked to be ground; glaze borrowed light in basement w.c. with ground diamond star glass. Clean windows, scrub floors before and after painting, and leave all clean and perfect on completion. Put in sashes when directed, and do any necessary re-glazing required.

EXCAVATION, DRAINAGE, ETC.

	$	c.
325 cubic yards of excavation, includes filling, levelling, etc., and carting away surplus earth		
6 lineal yards of 6 in. vitrified tile drains, complete		
5⅔ lineal yards of 4 in. vitrified fresh air inlet, complete		
36⅓ lineal yards of 3 in. tile weeping drains		
1 McGuire's cleaning out trap, and stone flag covering, complete		

NOTE.—Excavations are measured "cube," that is, length, breadth and depth, thus: 54 ft. 9 in. x 22 ft. 6 in. x 5 ft. 6 in. = equal to 6775 ft. 4 in. divided by 27, the number of feet in a cubic yard, gives 251 cubic yards, less (1 ft. 8 in.). Tile drains are measured lineal, that is, running measure, as indicated in above items.

MASONRY AND CUT STONE.

	$	c.
29 toise of masonry (86 ft. cube English measure) in foundation walls, (pargetted in cement outside)		
168 ft. 9 in supl. ft. Credit Valley cut stone base, inch draft and chiseled to jambs, complete		
4 Credit Valley stone sills, fine buchard, to cellar windows, 3 ft. 9 in. x 9 in. x 6 in., weathered		
1 Credit Valley stone sill, fine buchard. to cellar window, 3 ft. 3 in. x 9 in. x 6 in., weathered		
1 Credit Valley stone sill, fine buchard, to cellar window, 2 ft. 9 in. x 9 in. x 6 in., weathered		
1 portage entry stone sill, chiseled, to front window, 7 ft. 6 in. x 11 in. x 9 in., weathered and seated		
1 portage entry stone sill, chiseled, north window, 4 ft. 9 in. x 11 in. x 6 in., weathered and seated		
2 portage entry stone sills, chiseled, north and south windows, 4 ft. 0 in. x 11 in. x 6 in., weathered and seated		
7 portage entry stone sills, chiseled, north and south windows, 3 ft. 9 in. x 11 in. x 6 in., weathered and seated		
1 portage entry stone sill, chiseled, north and south window, 3 ft. 6 in. x 11 in. x 6 in., weathered and seated		
1 portage entry stone sill, chiseled, south window, 2 ft. 9 in. x 11 in. x 6 in., weathered and seated		
3 portage entry stone sills, chiseled, 2 ft. 0 in. x 11 in. x 6 in., weathered and seated		
3 Ohio stone sill, chiseled, rear windows, 4 ft. 0 in. x 11 in. x 6 in., weathered and seated		
1 Ohio stone sill, chiseled, 3 ft. 0 in. x 11 in. x 6 in., weathered and seated		
2 brown stone fine Bouchard heads to fuel doors, 3 ft. 0 in. x 9 in. x 9 in., checked for frames		
1 portage entry stone head to front doors, 7 ft. 0 in. x 13 in. x 14 in., chiseled and with curved sunk face		
2 portage entry corbels, curved face, 2 ft. 0 in. x 9 in. x 10 in., temporary protected with boards		
Bedding to frames, lintels, etc.		

NOTE.—Masonry is measured cube and the totals of dimensions added together, divided by 86, the number of cubic feet in a toise. The French measure per toise being 6 ft. x 6 ft. x 2 ft., equivalent to 6 ft. 4½ in. x 6 ft. 4½ in. x 2 ft. 1½ in. English measure, the French foot being ¼ of an inch longer than one foot English. Cut stone is measured superficial, that is, square, thus: 20 ft. x 20 ft. gives 400 superficial feet. Sills, heads, steps, etc., are counted and the number given according to sizes and quality of work, as shown in above items of quantities.

BRICKWORK.

	$	c.
7,648 hard clinker brick in cellar walls		
37,725 best hard common brick		
18,889 best Carlton facing brick, cleaned down with acid		
1,375 white brick, inside porch		
252 lineal feet of bevil and projecting bricks, labels, strings, etc.		
16 lineal feet of curved labels, strings, etc.		
77 lineal ft. of 2 rows slate on footings of brick walls, 20 in. wide		
100 lineal ft. of hoop iron for ties		
24 relieving arches		
6 curved arches (semi-circular and elliptic)		
4 fireplace arches on 2½ in. x ⅜ in. iron camber bars		
4 brick trimmer arches in concrete, to hearths		
8 circular flues (built round moulds) to chimneys		
4 wrought iron forked straps, 2 x ¼ in., and spikes		
7 galvanized iron collars to flues		
5 iron soot doors and frames to ash dumps and flues		
2 openings to vent flue, kitchen and bath room near ceiling		
3 chimney caps of projecting brick courses		
Bricklayer to build in strips for battens in outer walls and where directed, beam filling to floors and roof timbers, bed bond timbers, lintels, plates, wood bricks, frames, &c., and attendance on other trades		
Scaffolding on outside for brickwork (left for other trades)		
105 square yards of concrete, 3 in. thick, and substratum 6 in. thick, broken stone chips		
80⅓ square yards of Portland cement and sand, floated ½ in. thick		
Bedding, laundry and porch joists in cement		

NOTE.—Brickwork is measured cube and in Montreal the number of bricks given in estimating, is 20 bricks to the cube foot, and is ascertained thus:

6 bricks long say 4′ 0″
9 " high " 2′ 0″

54
3 brick thick

8′ 0″ = divisor.

8) 162 (20 to the foot.
16

The openings are measured and deducted from the solid work. Concrete when not deep is measured by the superficial yard, thus, 3 ft. x 3 ft. gives one yard. Concrete in heavy work is measured cube, 3 ft. x 3 ft. x 3 ft., or 27 feet to the cubic yard. Arches, etc., are given in numbers and other items noted as above.

ARCHITECTURAL TRAINING.

By A. C. HUTCHISON, R.C.A.

THE following paper on the above subject was read by the author at a meeting of architects and students of architecture held in the rooms of the Province of Quebec Association of Architects, Montreal, on Thursday, the 5th inst.:

I take it for granted that the object of architectural training is to properly qualify any person wishing to practice the profession of an architect by such a course of scientific and art instruction as will render him a competent architect. The question will at once arise, when can any architect be termed competent? I think the least that can be expected of any claiming to be competent is, that leaving aside any special skill that may be required in designing works of a monumental character or special technical knowledge required for designing a building for some novel or extraordinary use, he should be able to design a building for any ordinary purpose or situation so that its construction shall be safe and its appearance such that no violence shall be done to any canon of Art. For illustrating and working out of his design he should be able to prepare all the plans, elevations, sections, etc., as will make his intentions clear and to be understood by others. He should also be able to make a perspective drawing of any portion of his design, by which he can better illustrate his intentions to non-professionals who might not be able to appreciate them from the examination of geometrical drawings. He should also be able to prepare a specification in which the quality of materials, modes of construction and quality of workmanship are defined in such manner as to make his intentions clear to the workmen charged with the carrying of his design into execution. He should further be able to determine by an inspection of the work as it progresses whether his instructions are being carried out in a proper manner. To do this satisfactorily to himself and his client, he should by previous training be familiar with building materials and their use, and be able by a knowledge of construction to apply them in such manner that they are not wasted, and that his building is safe and perfectly able to fulfil the purpose for which it was intended. He should also have a knowledge of sanitary science, heating and ventilation, so that the building designed by him shall not only be comfortable to live in, but also free from anything prejudicial to health. In addition to this, he should have a general knowledge of the different styles of architecture, and such a definite knowledge of the styles or the style he adopts for his design as will enable him to apply it correctly.

I think it will be admitted that in the interests of the profession and of the public, a lower qualification than I have just indicated should not be entertained.

Before entering upon the question as to the character and scope of the scientific and art training necessary to qualify a person to become a competent architect and how such training can be obtained, let us briefly consider the position of the profession in the Dominion, its relations to the public and to the training required to qualify as an architect.

Until the obtaining of Acts of Incorporation from the Provincial Legislature by the Ontario Association of Architects some eighteen months ago, and still more recently by the Association of Architects for the Province of Quebec, there was nothing to prevent anyone, whether qualified or not qualified, from practising as an architect. In both of these Acts provision has been made for passing examinations before entering upon the study of architecture, and before entering upon active practice as an architect. The first or preliminary examination required by these Acts is to determine whether the candidate wishing to study architecture is qualified by his previous education to enter upon such study; the second or final examination is to ascertain whether the candidate after completing his course of study has obtained such scientific and art knowledge as will qualify him to practice as an architect. As both of these examinations are of a compulsory character, it is evident that the question of architectural training necessary to qualify for such examinations is one of vital importance, especially to those who have already entered upon or propose to enter upon the study of architecture.

Heretofore and at the present time, the only means for obtain-

ing such instruction is for a pupil to enter an architect's office, where, during three years pupilage, he is expected to acquire all the instruction and training required to qualify him to pass the final examinations required by the Association.

I think you will admit that the office work usually allotted to a student during his pupilage, while giving him a good training in practical work which could not be otherwise so well obtained, does not really afford the training in many subjects with which he should be familiar, the acquisition of knowledge in these subjects depending almost wholly upon his own diligence in the study of such works on architectural subjects as may be within his reach. When we consider the cost of architectural works, and the usually very limited means which an architect's student has for purchasing them, it is evident that his means for obtaining information in this way is somewhat limited, and unfortunately, it is to be regretted that the public libraries of Montreal do not contain the class of architectural works most useful to the student who might have the privilege of consulting them.

Until within a comparatively recent period, the same conditions as exist here for acquiring the training necessary to qualify for the practice of architecture existed elsewhere, but during the last thirty years many members of the profession in Britain, France, and the United States, have realized the fact that while the pupilage system has many advantages which cannot be ignored, it does not really afford a training in many subjects with which the student should be familiar if he expects to reach a high position in the profession.

It was probably owing to a realization of the defects of the pupilage system some thirty years ago by eminent members of the R.I.B.A., that an agitation was commenced for the establishment of a standard of qualification to which a candidate should attain before he was considered fit for practice as an architect, and that his fitness should be proved by passing examinations in prescribed subjects in the same manner as was required by the members of other professional bodies. The result of the agitation was, that the Institute prepared a scheme for voluntary examinations in subjects prescribed by them, the first of which took place in 1863. As the successful passing of the examinations under this scheme conferred no distinction upon the candidate, nor did it give him a position in the profession over those who did not attempt to qualify under the conditions, it is not surprising that the scheme, leading to no practical result, was in a great measure a failure, and the examinations carried out under it gradually languished. After a few years trial of the scheme, some modifications were made in it which had the effect for a time of giving it new life and bringing forward more candidates for voluntary examination. These modifications consisted principally in the dividing of the examinations into two classes, termed "preliminary," and "proficiency," and the granting of certificates to successful candidates with the title of "Graduates of the Institute," but still leaving them entirely voluntary. After the scheme thus modified had been in operation for some time, it was felt by many of the leading minds in the profession that though connection with the Institute as Associate had a very considerable value, it did not always give the holders of it the standing in the eyes of the public that they should have: it was, therefore, proposed some ten years ago, with a view to increase the value of the title A.R.I.B.A., to make the examinations compulsory on all future candidates for Associateship of the Institute. This proposal was, after considerable discussion, adopted, and a scheme of examinations prepared, the successful passing of which entitled the candidate to rank as an Associate; this scheme has now been in operation for about ten years.

The adoption of compulsory examinations by the Institute soon made it evident that a better system of training than was then in vogue was required to enable candidates to successfully pass them, consequently we find that in University College and Kings College, London, in which the study of architecture formed part of the regular course of instruction, modifications were made in their curriculums which better adapted them to furnish, if not the practical, at least the theoretical knowledge necessary to enable their students to pass the examinations fixed by the Institute. Besides these colleges there were a number of institutions of various kinds in London and elsewhere throughout Britain that offered pupils in architects offices an opportunity of obtaining instruction in subjects necessary to qualify for such examinations.

At this distance it would appear as if the opportunities for architectural training in Britain were ample, but judging from the action lately taken by the Architectural Association composed principally of the younger members of the profession, they do not consider the existing system of education entirely satisfactory, and during the last two years have promulgated a scheme, which is now in actual operation. The promoters of this scheme, while disclaiming any intention of being antagonistic to existing institutions in which architecture is taught, or of interfering in any way with the present pupilage system, think they can supply the particular education required better than can otherwise be obtained and better calculated to enable their students to pass the examinations prescribed by the R.I.B.A.

On referring to the proposed curriculum of the Architectural Association, I find that it extends over a period of four years, divided as follows:—

First year—The orders of Greek and Roman architecture, their origin, development and application; the several varieties of classic ornament; the nature of ordinary building materials and the elementary principles of construction; plane geometry applied to actual work; projection of solids and development of surfaces; elementary physics as applied to building; the rudiments of perspective mensuration, chemistry, geology, geometrical drawing of ancient examples and free hand drawing.

Second year—English architecture from the Conquest to A. D. 1500 and the successive development of the styles; the characteristic mouldings and ornaments of each period; the nature of ordinary building materials and the elementary principles of construction continued from the first year; the calculation of the strength of materials; land surveying and levelling; chemistry of building materials; elementary ornament and color decoration; drawings of ancient examples; free hand drawing; solid geomety.

Third year—History of architecture and features of mouldings and ornament; materials and their application in building; strength of materials; specification writing and taking of quantities; ornament and color decoration; sanitary science as applied to drainage; elementary natural philosophy, including light, sound, heat, hydrostatics and electricity; designing and construction of modern buildings; free hand drawing; perspective; construction masonry.

Fourth year—History of architecture; materials and their application in building; sanitary science, including water supply, ventilation, lighting and heating; measurement and valuation of buildings; professional practice; design and construction of modern buildings; drawings of ancient buildings; graphic statics and perspective; modelling and water color.

From this brief description of what is being done in Britain for architectural training, it is evident that it is a subject of vital interest to the profession, and one which at the present time is receiving greater attention than has ever before been given to it.

This interest in the education of architects is not confined to Britain. In France the subject has received the attention of the State, so that some two years ago an Official Commission in Paris was appointed to examine the legal conditions under which the profession of an architect is exercised, the system of study which gives access to it and the character of the diplomas granted in connection with this study. This Commission after a year's investigation, in which they were assisted by provincial societies of architecture, made a report respecting the training to be obtained in Provincial Ecoles des Beaux Arts, and called attention to what they considered defects in the system, the principal defect being that after providing a course of training to qualify as an architect no diploma was granted that would give the holder of it a status as an architect duly qualified to practice his profession. In the report the Commission also calls attention to the peculiar legal responsibility for his work which the law imposes upon an architect in France, and points to the anomaly that while the State exacts certificates of proficiency from contractors doing work of the most common character, it requires no certificate of proficiency or diploma from the architect who is supposed to be a compendium of knowledge in all that relates to building. The Commission recommend the establishment of district schools in affiliation with faculties of the State for the study of architecture, and that entrance to them should only be obtained after the candidate has shown by examination that he is sufficiently advanced in his studies to enable him to follow the special course of instruction necessay for his training as an architect.

The course of instruction recommended for these schools embraces pretty much the same subjects as are provided for in the curriculum of the Architectural Association to which I have already referred, and consists of the study of architectural forms, analysis of monuments, study of design, decorative art, history, archæology, perspective stereotomy, hygiene, theoretic, technical and practical construction, ventilating, heating, lighting and professional practice.

The Commission strongly recommend the granting of diplomas to those who pursue the full course of construction and pass the examinations, and to make the diplomas of value they suggest that only those holding diplomas shall be entrusted with government or municipal work.

The subject of architectural training has of late years received a large share of attention in the United States, where in addition to many art and technical schools of local character that afford assistance to architects' pupils in the prosecution of their studies, there are several universities, colleges and institutions which have Chairs of Architecture in which a full course of architectural training may be obtained. Among the institutions I may mention the Universities of Cornell, Illinois, Philadelphia, Columbia College and the Institute of Technology, Boston. In each the course of instruction extends over four years, and their curriculums embrace all the subjects of a scientific and art character necessary to qualify their graduates for practice. In the first two years other subjects are taught which do not pertain directly to architecture, but in the last two years of the course the studies are almost wholly confined to architectural subjects. The art schools of the Metropolitan Museum of Art in New York also conduct courses in architecture, which are so arranged as to prepare pupils who desire it for admission to the Ecoles des Beaux Arts in Paris, while for pupils who are engaged in architects' offices and cannot devote the time necessary for a full course, special classes and lectures are arranged to occupy only

part of the day or evenings for special subjects, instruction in which could not be obtained in their offices.

From the brief description of what is being done for architectural training in Britain, France and the United Statss, it will, I think, be evident that it is a subject which at the present time is considered of great importance, and is receiving a large share of attention. From the experience gained during the last twenty years, the consensus of opinion appears to be that study in the scientific and art subjects before referred to are essential to fully equip an architect for fulfilling the duties of his profession.

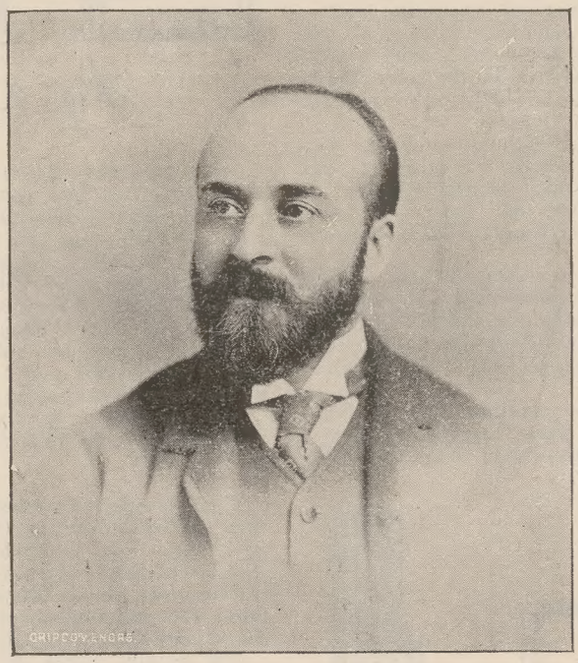
While the subject of architectural training has of late years and in other lands received great attention, and facilities more or less complete have been provided for imparting instruction in the special subjects required by an architect, no attempt has yet been made in the Dominion for the foundation of a Chair of Architecture in connection with any of our universities or colleges, nor are there any schools of art or technology in which pupils who have already entered upon the study of architecture in offices can obtain any practical assistance in the prosecution of their studies. Some time ago there was a rumor that the Minister of Education for the Province of Ontario intended founding a Chair of Architecture in the University of Toronto, but the scheme has not yet materalized.

It is to be hoped, however, that the Associations of Architects now formed in Ontario and Quebec will in the interests of the architects agitate for some means of affording the special instruction required by present and future pupils in preparing them to pass the examinations required by the respective Associations, either by the foundation of Chairs of Architecture in connection with our existing universities or colleges, or by the establishment of lectures and classes in immediate connection with the Associations. It would be premature at this early stage in the history of the Associations to suggest any particular scheme of education, but I feel that the necessity for affording some means of instruction in special subjects to present and future student associates, to enable them to pass the final examinations for registration, will soon force itself upon the attention of the associations.

For the present it would be a step towards and preparation for a more complete scheme if the Faculties of Applied Science of one or more of our universities would add a Chair of Architecture, and by means of lectures or classes in special subjects, afford instruction in such subjects as cannot very well be obtained in the daily routine of an architect's office.

At the present time the faculties of law in connection, I believe, with McGill and Laval Universities, while providing for a full course of instruction qualifying their graduates to pass the examinations for admission to the bar, also provide for lectures at such hours as will admit of students in law offices attending them, and that attendance on these lectures are compulsory on the students. If some such arrangement as this could be carried out, it would meet the present requirements.

NOTE.—Since preparing this paper I am glad to learn that a Chair of Architecture has been founded in the University of Toronto, and that Mr. C. H. Wright has been appointed as Professor, and hope that other universities may soon follow the example set them by Toronto.



MR. P. W. ST. GEORGE, CITY SURVEYOR, MONTREAL.

CANADIAN CITY ENGINEERS.

I.

THE subject of the accompanying portrait, Mr. Percival Walter St. George, City Surveyor of Montreal, was born at Torres, Morayshire, Scotland, on the 22nd of October, 1849, being the youngest son of Lieut.-Col. James D. N. St. George. After having spent seven years in France and at the University of Edinburgh in acquiring an education, he came to Canada in the year 1866.

The first two years of residence in this country were spent on the Nova Scotia Railway, and the succeeding four years, from 1868 to 1872, on the construction of the Intercolonial Railway. During the year 1873 Mr. St. George was engaged on the North Shore Railroad; 1874 saw him back again on the Intercolonial road. The following year his services were given on behalf of the Northern Colonization Railway.

From 1875 to 1873, he held the position of Deputy City Surveyor of the city of Montreal. In the latter year he was appointed engineer-in-charge of maintenance way on the Norfolk and Western Railroad, of Virginia. In December of the same year, he received the appointment of City Surveyor of Montreal. He was a member, in 1886, of the Royal Flood Commission of Montreal; associated with him were Messrs. Thos. Keefer, John Kennedy and Henry Perley.

Mr. St. George is a member of the Institution of Civil Engineers, of London, of the Council of the Canadian Society of Civil Engineers, also of the Association of Municipal Engineers of Great Britain. He married in 1872 Flora Stuart, only daughter of the Rev. Canon Townshend, rector of Amherst, Nova Scotia, and has issue six children.

HALIFAX, N. S.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

TRADE DIFFICULTIES.

IN this city each trade has its own association, and nearly all city tradesmen are members of their respective associations. Then there is the Amalgamated Trades and Labor Union. When any member of an association has a greviance to complain of against his employer, or when an employer violates the rules of an association, the case is investigated by the association to which the aggrieved belongs, or whose rules have been violated, and if the investigating committee find that the employer has dealt unjustly with an employee, or contra to the rules of the association, or violated the rules of the association in any way, and refuses to comply or rectify wrongs, the matter is laid before the amalgamated union, and all members are under obligation to quit work on that employer's job until he has made amends, &c. One of the rules of the Painters' Association was that no master painter should have more than three apprentices in his employ. The firm of Thomas Reardon & Co. took on a fourth apprentice, insisted on retaining him, and set him to work on the City Club building, now in course of erection, which resulted in a strike of all workmen on that job. Reardon's entire staff of painters being union men, quit work on his other jobs. Other master painters endeavored to assist Reardon, which caused their union men to strike also. This strike on the City Club building occurred during the last week of August. About a fortnight after, master painter David Roche, who was one of the parties that tried to assist Reardon, and who had the sub-contract for painting the new Catholic Glebe House, now in course of erection, sent an apprentice to prime work on that job, when all hands there struck work. Then followed strikes on several other jobs from similar causes.

Manufacturers and master workmen of the various trades then formed an Association, when committees from this and the Amalgamated Trades and Labor Union met a number of times to try and arrange a settlement. Two difficulties stood in the way of a settlement. First, Reardon positively refused to adhere to the painters' rules regarding the number of apprentices to be employed, and the other master painters sided with him in this respect; secondly, a day or two after the strike on the City Club building, two union painters went back to work with Reardon, thereby making themselves liable to a fine of $5 per day according to the rules of the Painters' Association, and which the painters demanded before agreeing to a settlement with the master workmen's Association. The latter, however, considered it unfair to these men who stuck to their work during the strike to leave them unprotected by their Association. Finally, after many meetings, it was agreed to leave the case of these men to be dealt with by the Painters' Association. As to the apprentice question, an agreement was reached by the Manufacturers' and Master Mechanics Association and the Trades and Labor Council, which provides: That all strikers shall at once resume work, the matter of the suspended members of the Painters' Union to be left with the Union to be dealt with; the pay of painters' apprentices to be $2.50 per week the first year, with an increase of $1.50 per week each year, including vacation, but excluding bonuses; every apprentice must be able to read and write the English language, and be not less than 16, nor above 21 years of age; every apprentice must agree to abide by the rules jointly agreed upon by the Associations; master painters must keep apprentices under legitimate instruction and otherwise comply with the conditions of agreement; a record to be kept of all apprentices employed, and the term of their apprenticeship; the joint committee of the two Associations to supervise the employment of apprentices, adjust all appeals preferred either by employers or apprentices, and for cause terminate apprenticeships, or place an apprentice with a new employer; apprentices to be entitled to and to be paid for one week's vacation; a certificate to be furnished the joint committee by the employer when an apprentice has completed his term, and the seal of both Associations shall be attached to such certificate, which shall then be accepted as evidence of the holder's right to rank as a journeyman. The agreement further provides that no strike is to be inaugurated until the points in dispute have been submitted to the Manufacturers' and Master Mechanics' Association and the Trades and Labor Council, and if necessary, referred by them to arbitration. If the latter course is adopted, the decision of the arbitrators is to be final. Should a member of either Association infringe in any way the conditions of this agreement, the Association to which he belongs shall forfeit the sum of $100. Unfortunately, strong opposition has developed in the Trades and Labor Council to the ratification of this agreement assented to by its representatives, while the union painters refuse to go to work until the question regarding the non-union men is settled, consequently a final adjustment of the entire difficulty, which was supposed to have been well-nigh reached, seems to be almost as far distant as ever.

If lead and oil paints do not wear as well as of old, as so many claim, they have at least been partially replaced by the Cabot shingle creosote stains, which wear as well, are cheaper, and give a coloring effect far more agreeable and artistic than is obtainable by any of the old methods.

TORONTO ARCHITECTURAL SKETCH CLUB.

AT the meeting held on Nov. 9th, Mr. John Millar, of the J. F. Pease Furnace Co., addressed the members on the subject of "Heating." The president of the Club, Mr. Pearson, occupied the chair.

Mr. Millar said: "I appear before you to night to give a talk upon the important subject of heating buildings. My experience has been gained in a practical way, and from this point of view I propose to talk to you this evening; it is possible that views may be advanced that will conflict with your ideas, but a great deal of knowledge is gained by hearing the opinions and experiences of different men engaged in every given line, and I will leave you to form your own conclusions.

"The three great systems of heating are by the use of steam, hot water and warm air." (The speaker here explained the meaning of the terms "direct," "indirect," and "direct-indirect" heating by steam and hot water, and went on to explain further heating by the system known as the "combination.") "This can be done by a combination of steam and warm air, and by hot water and warm air. The advantages of this system over steam and hot water are, that perfect ventilation can be secured at less expense, and perfectly free from any danger of the system freezing up. The pure air from the outside of the building is passed into the heater and out through the registers, warmed, giving forth sufficient pure warm air for ventilating. The balance of the heat required is given by the radiators which may be placed in rooms at a distance from the heater.

Of the different systems, heating by warm air is the cheapest, and in greater demand than any other, but there are many difficulties in the way to secure good results. These to a great extent can be removed by you, and I propose now to deal with some of them and point out to you how they can be obviated.

"It is of great importance that a good location be secured for the heater, and just here you can assist the heating man to advantage; arrange your cellar rooms so that the heater can be centrally located, if necessary giving the rooms to the north and west the advantage."

Here the speaker made a sketch of the ground floor of a building, showing how it could be heated with the very best results, and without taking up very much room in the cellar. In Fig. 1, dotted lines show the furnace and pipes in the cellar. Another sketch was made (Fig. 2) showing how some architects would like to have the work done.

"It would be of great advantage to the furnace men if larger space could be secured to run pipes to large and exposed rooms. This can be done by using 2 x 6 studding in place of the 2 x 4 which is generally used. A little forethought on this particular point will make a heating system a success that would otherwise be a complete failure."

"Ground floor registers should be placed in the floor. They may be placed in the wall provided there is capacity enough in the space between the studding for the size of pipe required, but

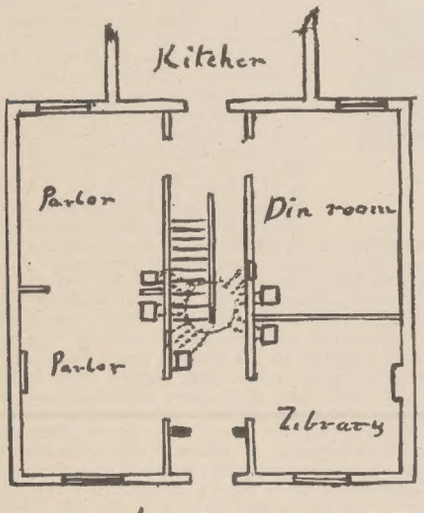


Fig 1

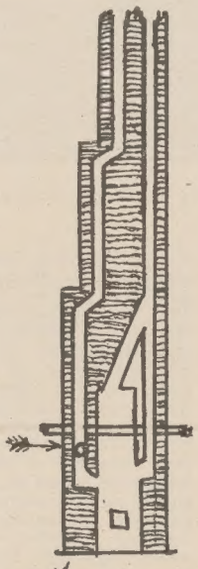


Fig 3

very much better work can be secured from registers placed in the floor."

The attention of the audience was then drawn to the defects to be found in chimneys. Fig. 3 shows a defective flue, when by making the change to the other side of the chimney (Fig. 4) a good flue can be had for the heater, leaving the crooked flue for the fire place. The flue should be straight without openings except that for the smoke pipe, and well and smoothly parged."

The speaker then spoke of the proper position in rooms for warm air registers and steam and hot water radiators.

"Registers should be placed as far away from windows as possible, and on the opposite side from a fire place. This cannot always be done; people do not build houses to suit the hearing apparatus, so we have to do the best we can with the house presented for the work.

"Steam and hot water radiators should be placed near or under windows; they radiate heat and warm the air coming in contact with them. Warm air from the furnace is conducted, and if conducted into the room near a window, the warm air is cooled quickly by coming in contact with the cold surface of the glass, and falling to the floor cold, cannot be heated."

As there is no rule to guide in laying out a system of heating by warm air, the speaker's advice was that architects should not

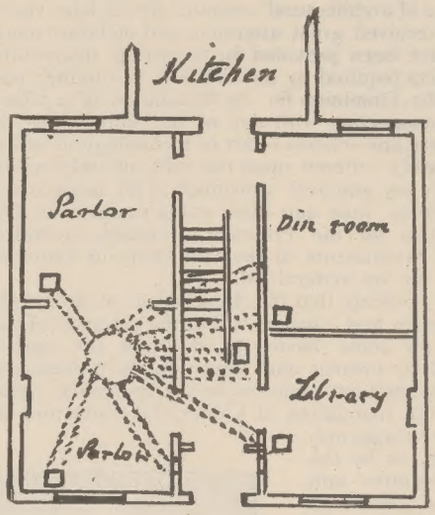


Fig 2

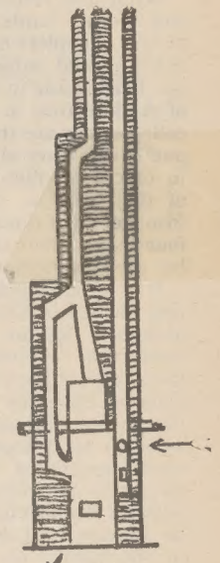


Fig 4

attempt the work, but leave it to the heating expert, especially as a guarantee is always given to heat the building.

In conclusion he thanked the Club for the close attention they had given him, and said he would be pleased to answer any questions, or explain any points that might not have been made as clear to them as he would have wished.

An interesting discussion took place, Messrs. Curry, Gregg, Johnson, and others taking part.

Mr. Curry explained some very interesting points, and referring to the lecturer, said "we have had one of the most instructive lectures given to us in a long time."

A hearty vote of thanks was passed to Mr. Millar, the chairman expressing the opinion that the speaker had fully covered the subject.

The following is a synopsis of the "Talk" on Classic Architecture" at the Club rooms, Oct. 26th, by Mr. Gambier-Bousfield, A.R.I.B.A. (Mr. Bousfield had prepared some rough crayon sketches of details of proto-classic caps and a map of the countries in which the art flourished before the birth of Christ, and these were exhibited together with prints from various professional journals bearing upon the subject.)

The lecturer called the attention of the chairman to the absence of note books among the students, and urged upon them the necessity of taking notes, as he also advocated very strongly that the students should come prepared to ask questions at the conclusion of the "talk," as discussion was the only way to bring out points that a lecturer might have omitted, especially in an extemporary "talk" like the present. He said he was gratified at being invited to give the opening "talk" of the season, and only regretted that more time had not been allowed him for the preparation of a paper, but he trusted that his audience would exercise patience towards a man unaccustomed to extemporary speaking. He did not intend to treat so much upon the subject of proportion as to show how false was the notion that the Greeks "*invented*" the orders, and to explain how the orders were developed from previous and distant empires. The Greeks were, as a nation, the most conceited people that ever lived; they attempted to show to their posterity that they invented everything they made use of—that they even invented astronomy—even if they did not go so far as to pretend they invented the stars. Certainly they were a wonderful people, possessed of a genius unknown before, but had it not been for the foundation of art laid in other countries hundreds of years before, upon which the Greeks added a superstructure, they could never have attained to such perfection in the art as they did.

To understand this, it would be necessary to take a glance at the map, which exhibited the boundaries of some eight or ten great empires that preceded the republics of Greece. There was the Egyptian empire, dating from B. C. 4,000 to B. C. 600; the newly discovered, but no less important, empire of the Hittites, covering the whole of Asia Minor and holding away alternately with Egypt over Syria, where history ran concurrently with that of Egypt, or from about 2,300 B. C. to 1,300 B. C. (The lecturer here called attention to the fact that he was purposely making use of round numbers in his dates to simplify the subject.) The ...n the centre of that area which had at its four corners the Bl...

Sea, the Caspian Sea, the Persian Gulf and the Dead Sea, four great empires succeed one to the other. There was the Chaldean, B. C. 2,300 to B. C. 1,600, swallowed up by the Egyptians; then the rise of the Assyrian empire, about B. C. 1,320, side by side with Egypt and the land of the Hittites, until its subjugation by the Egyptians in B. C. 625. Twenty years later the empire of the Babylonians sprang into existence, to be in its turn subdued by the all-conquering Persians, who, subduing the Babylonians and Egyptians, extended their empire from the centre of India in the east to the shores of Greece in the west.

But besides these great empires, there was the country of of Phœnicia on the border of Palestine with the powerful republics of Tyre and Sidon. Of the earlier history of these singular people little was known prior to B. C. 1,046, but discoveries have proved that they were an enterprising people, having colonies in Spain, Italy, Greece, Asia Minor, the islands of the Mediterranean and North Africa, before the year 1,000 B. C. Phœnicia flourished from 1,250 B. C., when Tyre is believed to have been built, to 860 B. C., when the celebrated Elissa or Dido, together with all the aristocracy of the country, emigrated to Carthage, already a colony of Phœnica, and there founded her celebrated empire. The Phœnicians were the sailors of the ancient world; each nation in turn hired the Phœnician ships and sailors for its maritime expeditions.

The kingdom of David and Solomon must not be forgotten; its position was clearly to be seen on the map. Another important empire was that occupying the western part of Asia Minor —that of the Syrians—from which neighborhood came the early Greeks. Then came the history of the republics of Athens and Sparta, with their colonies in the Mediterranean islands, followed by the career of the youthful conquerer Alexander the Great, King of Macedonia, who extended his kingdom into an empire reaching from Macedon and Greece on the west to India on the east.

The history in connection with the subject closes with the Romans, who overran all previous countries.

An important fact in this early history was, that everywhere Greek soldiers took part in the wars that were being waged by one ruler against another. As the ships of Phœnicia were hired for transport, so the Greek mercenaries were hired to fight.

Thus by this outline of history it will be seen how intimately connected were all these ancient nations one with another. There was no such thing as isolation; each nation and people was well known to every other; so that it is impossible to reject this and the further confirmatory evidence in the details of architecture in an enquiry as to whence the Greeks got their first notions of art. Of their details, more will be said later.

Another matter to be borne in mind, was that of the materials to be found for building in the countries occupied by the nations mentioned. In Egypt, stone was used, but this country really does not, in this particular, help the investigation, because the stone used was not local but brought chiefly from 500 miles up the country. In the land of the Chaldeans, Assyrians and Babylonians was loamy clay; in Persia was stone, in the land of the Medes, the ancestors of the Persians, was wood.

Material exerted a strong influence on the art. Persian and Lydians, or early Greek architecture, was executed in stone, but in the principles of wooden construction, while the architecture of the Chaldeans, Assyrians and Babylonians was of brick.

The lecturer then proceeded to describe the forms of Greek temples and the details of the orders, and went on to show by means of his crayon sketches of caps from Egypt and Phœnicia, the origin of the Doric, Ionic and Corinthian details.

From temples at Mediuct Habon and Bern Hassan in Egypt were obtained the rough forms of the Doric; Phœnicia at Kitron furnished examples of Ionic scrolls as decorative features for capitals, while in Egypt at Philae, were found caps of decidedly Corinthian outline—all of which were designed and executed long before the Roman occupation of these countries.

The Cornithian order was not, properly speaking, a Greek order; it was the Romans who fully developed it. The lecturer produced a number of beautiful illustrations of the Roman order as exemplified by buildings principally in the north of Africa, Algiers and Tunis, and explained how in the Roman order the column as a structural feature sunk into a decorative adjunct, while the arch came into prominence constructurally.

In concluding, the lecturer said he had to thank his audience very much for the attentive manner in which each member had listened to him during the whole three-quarters of an hour he had been speaking.

In the course of the discussion which followed it was stated, that a belief existed that the "Tuscan order"—which the lecturer had included as an early form of Grecian Doric, which was misnamed "Tuscan" just as "Corinthian" was misnamed—had an independent origin, and was not derived from any source, as the lecturer showed the others were. In answer to this he remarked that though he had not alluded to Tuscany individually, he had shown how Italy (or Etruria) was an early colony of the Phœnicians, and was no more isolated than was Greece or Persia, and he did not believe in any theory of independent origin or spontaneous invention, but held that there was a system of development in the art which overran all these countries, outside of which it was impossible to seek for origins. As a matter of fact, Etruria was peopled from Asia Minor in the twelfth century B. C., prior to the arrival of the Phœnicians, which adds another proof to the development of the art of architecture.

A very hearty vote of thanks was passed, and in answer to the chairman the lecturer said he would be happy to give his map and sketches to the Club if they would be of use.

"CANADIAN ARCHITECT AND BUILDER" COMPETITION.

THE designs received in the CANADIAN ARCHITECT AND BUILDER competition for a suburban residence have been forwarded to Ottawa. We hope to publish the judge's report thereupon in our December issue.

PASSING EVENTS.

The "smoking" concerts with which the regular meeting of the Montreal Underwriters' Association were inaugurated recently, strike me as being somewhat incongruous with its objects, which are popularly supposed to be the prevention of "smoking," and the pocketing of premiums.

The new Bank of Hamilton in course of erection at the corner of King and James streets, Hamilton, will cost the architect little for draughtsmanship, as it is simply an abbreviated copy of the Bank of Commerce at Toronto. It may be added that the process of abbreviation has not enhanced the merits of the original design.

Municipal authority was enforced in an unusual and ludicrous manner at the town of Niagara Falls, the other day. The Michigan Central Railroad officials resisted the attempt of the town to lay water mains under the tracks. The mayor, constables and fire brigade turned out and put the enemy to flight by turning on them the hose.

A despatch from Ottawa announces that Mr. Perley, late chief engineer of the Department of Public Works, is sinking to his death. The news brings to me, as to many others, a feeling of sorrow. The keen suffering which the exposure of his one mis-step has brought upon the aged man who for many years gave valuable service to this country, proves beyond question his unfitness to be classed with the professional boodlers whose habitual crooked practices have recently been dragged into the light of public condemnation.

The college students of Toronto took a new departure this year from the established custom of doing mischief for mischief's sake on Hallowe'en, by pulling down the unsightly fence surrounding the Normal School grounds. For several years the citizens and the press had urged the government to replace the eyesore with something of a more pleasing character, but their entreaties went for naught. The students accomplished the desired result in a few minutes But for the knowledge that the artistic instinct exists but feebly in the management of the provincial art schools, I would be astonished that they would live so contentedly amid such "surroundings." Let us hope that the removal of the mass of ugliness upon which their eyes have so long rested, will result in quickening their artistic perceptions, and secure improvement in the ideals placed before their pupils.

PASSERBY.

PERSONAL.

Mr. W. H. Taut has received appointment to the position of City Engineer of Guelph, Ont.

Mr. M. A. Piggott, contractor, of Hamilton, Ont., is spoken of as a candidate for municipal honors in that city.

Mr. J. B. Reid, architect, of Kingston, who went to Europe recently, presumably only on a visit, is said to have decided not to return to that city. His business in Kingston has been transferred to Mr. Arthur Ellis, who has been in charge during his absence.

Mr. James Balfour, of Hamilton, has submitted a design in the competition for the Carnegie library to be erected at Pittsburgh, Pa. There are six prizes of $2,000 each offered in addition to the carrying out of the work which will reward the architect whose design shall be awarded first position. Mr. Balfour's pluck in entering such a competition is worthy of commendation.

Mr. C. H. Acton-Bond, who for two years past has discharged in a courteous and efficient manner, the duties of secretary of the Toronto Architectural Sketch Club, has been compelled to resign the office, on account of having removed to Hamilton, where he has entered the office of Mr. James Balfour, architect. Mr. Murray White, who was appointed assistant secretary of the Sketch Club at the recent election of officers, has been chosen as Mr. Bond's successor.

PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

The Committee appointed by the Council of the Province of Quebec Association of Architects at the meeting held in Quebec on the 11th of September, to consider the desirability of arranging for lectures, classes, &c., during the ensuing winter season, held a meeting in the Council room on Thursday, the 5th instant, at which all the members of the Committee were present, when it was resolved to make the following recommendations to the Council: (1). That monthly meetings of the Association be held to which student associates should be invited, and at which papers on special subjects be read, followed by discussions. (2). That steps should be taken to have a conversatione and exhibition of architectural drawings about the month of February or March next. (3). That classes should be organized for the benefit of students in the following subjects: Design, pen and ink drawing, colouring of designs, construction, modeling, perspective. (4). That lectures should be delivered to the students bearing upon the subjects prescribed for final examinations. (5). That opportunity should be furnished students to visit and inspect works of importance from time to time.

PUBLICATIONS.

We have received a copy of illustrated catalogue No. 2, of the Rathbun Co., Deseronto, containing illustrations and particulars of their terra cotta fire-proofing material, and also cuts of various important buildings recently erected wherein the material is in use.

The *Engineering Magazine* is a high-class, beautifully illustrated magazine like the *Century* and *Harper's*, but devoted exclusively to engineering and industrial subjects. All news stands, 25 cents; or by mail, $3.00 a year. Engineering Magazine Company, World Building, New York City.

The *American Etcher*, of New York, is doing an admirable service to Art by the publication every month of a high-class etching from the hands of leading American artists. A list of the plates already published is furnished by the publishers, George F. Kelley & Co., 31 Union Square, New York, on request. A remarkable feature of this periodical is its extremely moderate price, viz: 35 cents a month, or $3 a year.